STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

COMMONWEALTH EDISON COMPANY	**:**	
	:	
Petition to implement a competitive procurement process by establishing Rider CPP, Rider PPO-MVM, Rider TS-CPP and revising Rider PPO-MI	**:**	**Docket No. 05-0159**

Rebuttal Testimony of

Dr. Arthur B. Laffer
Laffer Associates

on behalf of

The Building Owners and Managers Association of Chicago

Q. Please state your name and business address.

A. My name is Dr. Arthur B. Laffer. My business address is 5405 Morehouse Drive Suite 340, San Diego, California 92121.

Q. What is your current position?

A. I am the Chairman of Laffer Associates, an economic research and consulting firm that I founded in 1979.

Q. Are you the same Dr. Arthur B. Laffer who previously filed direct testimony in this proceeding?

A. Yes.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my testimony is to consider and respond to the rebuttal testimony of certain witnesses in this proceeding who presented rebuttal testimony on behalf of Commonwealth Edison Company ("ComEd").

Q. Please describe the matters to which your rebuttal testimony relates and the witnesses your rebuttal testimony will address.

A. Several of ComEd's witnesses have raised questions concerning: (a) our proposed pay as bid modification to ComEd's proposed descending clock auction supply procurement process, and (b) my testimony that the Supplier Forward Contracts ("SFCs") which ComEd will execute with suppliers are not exchange traded or other market traded futures contracts. These ComEd witnesses are: Dr. Chantale LaCasse, Mr. Andrew Parece, Dr. William Hogan and Ms. Arlene Juracek. My rebuttal testimony answers the questions raised by these witnesses.

I. Response to Rebuttal Testimony of Dr. Chantale LaCasse

Q. Dr. LaCasse criticizes your proposed descending clock, pay as bid auction format on the ground that there would be "no dynamic information feedback." (ComEd Exhibit 11.0, page 65, line 1536). How do you respond?

A. As I stated in my direct testimony, I do recommend that as the price quoted to bidders continues to "tick down" that bidders not be informed of the number of tranches (i.e., the amount of electricity supply) bid for the preceding round as ComEd has proposed because this information will deter bidders from bidding as low as possible. (BOMA Exhibit 1.0, page 14, lines 317-328). This information only encourages bidders to implicitly collude on a high price. Remember that the dynamic information feedback that Dr. LaCasse favors is information going to the sellers that will facilitate their achieving higher prices in the auction. The dynamic information feedback that Dr. LaCasse favors would facilitate implicit bidder collusion.

In my approach, bidders would receive the dynamic information of the price for each product from round to round, and price is the most critical piece of information to a bidder in this auction. For example, when the price clicks down to a certain level in my proposed descending clock, pay as bid auction a bidder may decide not to bid because the bidder believes she will be successful at the prior higher price at which the bidder did make a bid. If, however, the auction manager opens a new round of bidding at an even lower price, that bidder may reconsider her judgment that she will be successful in the auction at the last price the bidder bid tranches and decide to reenter the bidding at the new, lower price.

Therefore, the price in each round of my proposed descending clock, pay as bid auction format is dynamic information feedback.

Q. Dr. LaCasse also states that the descending clock, pay as bid auction that you have proposed "is nothing more or less than a sealed bid auction." (ComEd Exhibit 11.0, page 74, line 1750). Do you agree with this statement?

A. I disagree that our proposal is nothing more or less than a sealed bid auction, although some of the positive elements of a sealed bid auction are included in our proposed descending clock, pay as bid auction. Our descending clock, pay as bid auction would be like a sealed bid auction in the sense that bidders would not be provided any information which would allow bidders to discern the bidding strategy of other bidders. However, unlike a sealed bid auction our approach would utilize an auction manager who actively manages the bidding during the auction. Moreover, in contrast to a sealed bid auction, as I discussed previously bidders in our descending clock, pay as bid auction would receive price information from round to round and could even decide to reenter the bidding after previously refusing to bid if the bidder changed her opinion of what bid price was necessary to be successful in the auction because of the dynamic information feedback that bidding was still ongoing. In contrast, a sealed bid auction means that a bidder makes only one bid and the pricing of that bid cannot be altered after the bidder submits it.

Q. Is your descending clock, pay as bid auction approach a radical change to ComEd's proposed auction procurement process like a change to a sealed bid auction?

A. It is not nearly as much of a change as a sealed bid auction. We merely propose a change from the descending clock, uniform price auction approach proposed by ComEd to a descending clock, pay as bid auction approach. As Dr. LaCasse herself states: "Uniform pricing is just one of the features of the auction." (ComEd Exhibit 11.0, page 73, line 1729). The operation of the descending clock, pay as bid auction would utilize the auction rules proposed by ComEd, subject to three significant changes in operation necessary to properly implement a pay as bid approach.

Q. Please describe the significant differences in operation of your proposed descending clock, pay as bid auction from ComEd's proposed descending clock, uniform price auction.

A. The first difference is that under our descending clock, pay as bid approach, the tick-down in price and bidding do not stop when the tranches of electricity supply bid equal ComEd's full supply requirements and only cease when no bidder is still willing to bid. Why on earth would anyone ever prohibit a supplier from offering a lower price? The second difference is that under our pay as bid approach we would not provide bidders with information that would facilitate implicit collusion on a high price. The third difference is that the tick-down in price from round to round would be made in equal decrements, rather than be adjusted based on the excess supply remaining in the auction and other factors. Like the second difference from ComEd's proposed auction described above, this third difference also is designed to preclude the dissemination of information that would facilitate any form of implicit collusion.

Q. Please describe the difference in your approach relating to information provided to bidders.

A. As I understand ComEd's proposed auction procurement process, the auction manager would provide to each qualified bidder a list of all qualified bidders and the auction's total "initial eligibility" (defined by ComEd as the number of tranches of supply qualified bidders have indicated they will bid at the maximum starting price)(Illinois Auction Rules, ComEd Exhibit 11.4, page 20-21). In addition, under ComEd's proposal, the auction manager provides to bidders information on the excess supply in the auction from round to round. (ComEd Exhibit 11.0, page 5, lines 112-115). Disclosure of this kind of information to bidders raises the signaling issues I discussed in my direct testimony. (See BOMA Exhibit 1.0, page 14, lines 307-316). Under our descending clock, pay as bid approach, bidders would not receive this information.

In this connection I note that in her rebuttal testimony Dr. LaCasse refers to an article by Professor Paul Klemperer, "What Really Matters in Auction Design," Journal of Economic Perspectives, Volume 16, Number 1, 2002. (ComEd Exhibit 11.0, page 69, lines 1635-1636). Dr. LaCasse also might have noted the following statement by Professor Klemperer in that article in which he refers to the implicit collusion that allegedly occurred when the uniform electricity pricing auction approach was used in the United Kingdom, prompting a change to a pay as bid method:

> The electricity regulator in the United Kingdom believes the market in which distribution companies purchase electricity from generating companies has fallen prey to exactly this kind of "implicit collusion" (Office of Gas and Electricity Markets, 1999, pp. 173-174).…A frequently

> repeated auction market such as that for electricity is particularly vulnerable to collusion, because the repeated interaction among bidders expands the set of signaling and punishment strategies available to them and allows them to learn to cooperate (Klemperer, 2002). (P. Klemperer, "What Really Matters in Auction Design," Journal of Economic Perspectives, Volume 16, Number 1, at pages 171-172).

Q. Please describe the difference in your approach relating to the determination of the tick-down in price from round to round.

A. In ComEd's proposed auction procurement process, the tick-down in price from round to round is determined according to a formula that is based in part on the excess supply of tranches in the auction. (ComEd Exhibit 11.4, pages 41-42, 82-86). Under this approach, the price decrements would become smaller as the amount of excess supply in the auction is reduced. (ComEd Exhibit 11.4, pages 82-86). In contrast, under our pay as bid approach the prices from round to round would merely decrease in equal decrements so that there would be no signaling to bidders that the auction was nearing completion. We recommend that the price tick down in equal decrements because a price that ticks down in smaller amounts as the amount of excess supply decreases, as ComEd has proposed, provides bidders with information that facilitates implicit collusion. And, of course, our auction would not stop at the price where the tranches of supply offered by the bidders equal ComEd's full requirements. Our auction would stop only when there is a price at which no supplier is willing to offer electricity for sale.

Q. Can you provide an example of how a descending clock, pay as bid auction would operate which further illuminates why it is not a sealed bid auction?

A. Yes. As in ComEd's proposal, the auction manager would tick down from round to round the offered purchase price for different electricity supply products. However, as I discussed above, under our proposal the auction's descending price bidding would continue until no bidder is willing to supply electricity at a lower price. At that point, the auction would be completed. Winning bidders would be paid the price of their specific bid, rather than all winning bidders being paid the same uniform, market clearing price, as ComEd has proposed. Offers to sell electricity would be accepted in their order of ascending price beginning with the lowest price up to that price where the utility's full electricity supply requirements were supplied. If excess supply is present after completing this process (i.e., there is more supply than necessary at the highest accepted price) the winning bidders at the highest accepted price would be selected at random. Excess supply also is eliminated at random in ComEd's proposal. (ComEd Exhibit 11.4, pages 32-33).

Attached to this Rebuttal Testimony as BOMA Exhibit 3.1 is an example of how a descending clock, pay as bid auction would work. The prices and number of tranches of supply bid on BOMA Exhibit 3.1 are for illustrative purposes only because the actual prices and number of tranches that will be bid are of course unknown at this time.

Q. In response to your descending clock, pay as bid proposal, Dr. LaCasse argues that under ComEd's proposed uniform price auction approach, bidders will bid lower than in your pay as bid approach because "a low price has a big upside [in a uniform price auction] in that it increases the chances that the bidder will win. Bidding low [in a uniform price auction] does not have a big downside because

the bid does not necessarily affect how much the bidder will be paid for its supply given that the bidder's payment is determined by the clearing price." (ComEd Exhibit 11.0, page 68, lines 1596-1599). Do you agree?

A. Dr. LaCasse maintains that a bidder in a uniform price auction has an incentive to bid lower than a bidder in a pay as bid auction because bidding low does not have a big downside. What Dr. LaCasse omits is that under ComEd's proposed descending clock, uniform price auction, a bidder will never get the chance to bid lower because the auction stops at a uniform, market clearing price. ComEd's descending clock, uniform price auction ends when supply just equals demand; at this point all bidders are prohibited from bidding any further (and therefore from bidding any lower) (ComEd Exhibit 11.4, pages 8, 24). Consequently, it is impossible for a bidder who might be willing to sell more electricity to ComEd at a price lower than the market clearing price to actually bid lower and more aggressively in the descending clock, uniform price auction favored by Dr. LaCasse. In short, Dr. LaCasse mistakenly defends ComEd's descending clock, uniform price auction, which precludes bidders from aggressively bidding lower prices, on the ground that it gives bidders the incentive to aggressively bid lower prices. Therefore, Dr. LaCasse's argument that bidders will bid lower in ComEd's proposed descending clock, uniform price than in my descending clock, pay as bid auction is wrong.

Q. But Dr. LaCasse contends that under ComEd's descending clock, uniform price approach: "If there were at least one bidder willing to supply tranches at a lower

price, then the price would keep ticking down." (ComEd Exhibit 11.0, page 73, lines 1734-1735). Is her statement correct?

A. No, that statement is not correct. Her statement actually describes our proposal not ComEd's proposal. In ComEd's proposed uniform price auction, the auction stops when the electricity supply offered by bidders equals ComEd's full supply requirements. (ComEd Exhibit 11.4, pages 8, 24). In fact, under ComEd's uniform price proposal, lower bids are expressly prohibited. (ComEd Exhibit 11.4, page 47). Under ComEd's descending clock, uniform price auction approach, the willingness of a bidder to supply electricity to ComEd at a price lower than the market clearing price is made irrelevant because the price does not keep ticking down once the supply offered equals ComEd's full requirements. If a bidder is willing to provide electricity to ComEd at a lower price ComEd will never know it under its proposed auction. Very simply, an electricity supplier who wins ComEd's descending clock, uniform price auction pockets the difference between the market clearing price and the price at which that supplier would have been prepared to sell electricity to ComEd had a pay as bid auction approach been used, and the Illinois consumer loses dollar for dollar.

Q. Dr. LaCasse also refers to the revenue equivalence theorem and states the following: "This theorem says something quite extraordinary. It says that under very specific assumptions (regarding, among other things, the bidders' attitude toward risk and the type of uncertainty they face) the payment to the bidder under [a] pay-as-bid auction for one item and the payment to the bidder under a uniform auction for one item are on average exactly the same." (ComEd Exhibit 11.0,

pages 68-69, lines 1611-1618). Is the revenue equivalence theorem applicable to ComEd's situation?

A. The revenue equivalence theorem is a neat theoretical construct which has no practical applicability here. The assumptions required by this theorem are so restrictive and unrealistic as to render this theorem unusable. Any application of the revenue equivalence theorem to a real auction must begin with a determination of whether the assumptions that comprise part of that theorem exist in the particular situation. And, to the extent the assumptions do not pertain the advantage falls totally to our pay as bid proposal and not to the uniform price proposal as proffered by ComEd.

Professor Paul Klemperer, the noted authority on auctions whom Dr. LaCasse herself cites in her rebuttal testimony (e.g., ComEd Exhibit 11.0, page 69, lines 1635-1638), gives the following statement of the revenue equivalence theorem in his paper "Auction Theory: A Guide to the Literature" at page 11:

> Assume each of a given number of risk-neutral potential buyers of an object has a privately-known signal independently drawn from a common strictly-increasing, atomless distribution. Then any auction mechanism in which (i) the object always goes to the buyer with the highest signal, and (ii) any bidder with the lowest-feasible signal expects zero surplus yields the same expected revenue (and results in each bidder making the same expected payment as a function of her signal). (Available at www.paulklemperer.org).

Even a non-professional can see that these criteria are so extreme as to render this theorem of little use as a guide to policy.

By way of example, let's just look at the assumption of risk neutrality, which is only one of the many assumptions required by the revenue equivalence

theorem. In ComEd's proposed auction, the assumption that all bidders are risk neutral cannot be made. Rather, some bidders may own generation assets; others may not. Some may purchase options to purchase power prior to the auction; others may not. In ComEd's proposed auction some bidders will clearly be risk averse – a clear violation of the conditions required for the revenue equivalence theorem. One of ComEd's proposed incentives for bidders to participate in the auction is that the auction is intended to be the only opportunity to obtain a long-term electricity supply contract with ComEd; ComEd will obtain in the PJM spot market any electricity supply it does not obtain in the auction. (ComEd Exhibit 4.0, page 35, lines 832-833, page 50, lines 1169-1172, page 61, lines 1451-1453; ComEd Exhibit 3.0, page 53, lines 1153-1160). Clearly, a bidder who owns generation plants or has wholesale power purchase contracts has some degree of aversion to the risk of not winning a long-term electricity supply contract with ComEd in the auction.

The other assumptions of the revenue equivalence theorem are equally as untenable. Now, if Dr. LaCasse had stated that there are dynamic effects in markets that reduce the advantages of a pay as bid approach over a uniform price auction she would probably be correct. But even with dynamic effects the advantages of a pay a bid approach may be very large indeed. No matter what theorem one uses there are no reasonable conditions under which our descending clock, pay as bid auction would be bested by a descending clock, uniform price auction.

In fact, consideration of the revenue equivalence theorem itself only shows how restrictive the conditions would have to be in order for ComEd's proposed uniform price auction to possibly be as good as our descending clock, pay as bid auction. Dr. LaCasse's use of this theorem to attempt to demonstrate that ComEd's uniform price auction would actually be as good as our pay as bid auction is a misuse of the theorem.

Q. Dr. LaCasse also stated that she offered "evidence from a large body of literature to establish that Dr. Laffer's claim that a pay-as-bid approach would necessarily produce better prices for ComEd customers is incorrect." (ComEd Exhibit 11.0, page 65, lines 1546-1548). Does the economic literature support Dr. LaCasse's position?

A. Dr. LaCasse further states that "absent very particular environments or special assumptions, the ranking of pay as bid versus uniform price auction is essentially ambiguous." (ComEd Exhibit 11.0, page 69, lines 1629-1631). Dr. LaCasse does not cite any literature directly comparing a pay as bid auction format with a uniform, market clearing price auction format in the context of a descending clock auction of electricity supply. In preparing my recommendation for a descending clock, pay as bid auction I reviewed a number of articles in the economic literature concerning the design of auctions. I applied economic theory directly to ComEd's proposed descending clock auction and concluded that a pay as bid auction was far preferable in this situation because bidders would not have the opportunity to bid as low as possible under ComEd's descending clock, uniform price approach because ComEd's proposal does not use the whole supply curve.

Q. Does the descending clock, pay as bid auction that you recommend create a "winner's curse" for bidders as Dr. LaCasse has suggested that would have a chilling effect on bidders' willingness to bid low prices? (ComEd Exhibit 11.0, page 108, lines 2545-2548).

A. Simply put, the "winner's curse" means that if a bidder wins the Mona Lisa at auction for $500, and the last bidder bidding against the winner dropped out at $400, the winner is "cursed" because every other bidder placed a lower value on the Mona Lisa. A winner's curse issue may arise in an auction if bidders are unsure of the value of what they're bidding on. ComEd's bidders know that value.

The bidders that ComEd expects to see as participants in its auction are hardly the type to be unsure of the value of the contracts to supply power to ComEd for which they are bidding. ComEd has told us that its bidders will have specialized skills in price-risk management that enable them to assemble wholesale supply portfolios and compete in the auction. (ComEd Exhibit 4.0, page 24, lines 545-549, page 36, lines 856-859; ComEd Exhibit 11.0, page 14, lines 329-342). ComEd further tells us that bidders will include "financial players" like Morgan Stanley and Goldman Sachs, with expertise in hedging market risks and the ability to put together complex supply portfolios consisting of contracts with capacity resources, long-term forward contracts to serve base load, reliance on the spot market to serve peak load, and Financial Transmission Rights ("FTRs") to hedge congestion risk. (ComEd Exhibit 5.0, page 25, lines 547-553). In fact, Dr. LaCasse tells us that she expects energy marketers and

"financial players" to form the bulk of the anticipated bidding pool in ComEd's auction. (ComEd Exhibit 4.0, page 62, line 1473). The other bidders will be actual owners of generation who are of course very knowledgeable about the value of winning an electricity supply contract.

The type of bidder ComEd expects to see, with the hedging and price-risk management expertise requisite to the assembly of complex electricity supply portfolios and the financial wherewithal to satisfy ComEd's credit requirements for the auction, is hardly likely to be unsure of the value of what they're bidding on. In an article written by ComEd witness Mr. Andrew Parece and two other authors, Mr. Parece defines the winner's curse as "the tendency for naive auction winners to lose money, because they fail to take account of the information contained in winning a competitive auction." (ComEd Exhibit 12.2, page 11, note 6). It is fair to say that ComEd's anticipated bidder pool is anything but naive. They will bid based on their evaluation of the value of winning ComEd's auction and therefore will not be subject to the "winner's curse" if our proposed descending clock, pay as bid auction is used.

II. Response to Rebuttal Testimony of Mr. Andrew Parece.

Q. What is the purpose of this part of your rebuttal testimony?

A. The purpose of this part of my rebuttal testimony is to respond to certain issues raised by ComEd's witness Mr. Andrew Parece.

Q. Have you reviewed those parts of Mr. Parece's rebuttal testimony that address your direct testimony in this proceeding?

A. Yes. A substantial part of Mr. Parece's rebuttal testimony is to the effect that our descending clock, pay as bid auction is equivalent to a sealed bid auction. (ComEd Exhibit 12.0, page 40, lines 848-856). Dr. LaCasse also testified that our descending clock, pay as bid auction is equivalent to a sealed bid auction. (ComEd Exhibit 11.0, page 74, lines 1750-1755). I responded to Dr. LaCasse's argument previously in this rebuttal testimony.

Q. Is your response to Mr. Parece's rebuttal testimony regarding the alleged equivalence of your descending clock, pay as bid auction to a sealed bid auction the same as your response to the rebuttal testimony of Dr. LaCasse on this issue?

A. Yes.

Q. Mr. Parece also states that your proposed descending clock, pay as bid approach will not be more competitive than ComEd's approach because under your pay as bid approach bidders have the option to participate in the spot market if they are not winners in the auction, and this option affects whether they would bid significantly below their estimate of the future spot market price. (ComEd Exhibit 12.0, page 43, lines 906-910). Do you agree?

A. Mr. Parece's argument against our approach does not make sense because bidders can participate in the spot market under either our proposed pay as bid auction or ComEd's proposed uniform price auction. However, Mr. Parece's argument points to a potential advantage for Illinois electricity consumers under our pay as bid approach that is not available under ComEd's uniform price approach: If a bidder's estimate of the future spot market price is below the auction price, under our pay as bid approach that bidder may continue to bid lower even if supply in

the auction is less than ComEd's full requirements. This is not possible under ComEd's uniform price approach because ComEd's auction stops when supply in the auction equals ComEd's full requirements.

Q. Mr. Parece also states that under your proposed pay as bid approach "auction participants will add a premium to (i.e., increase) their estimate of the marginal supply price to account for uncertainty and submit bid schedules higher than their marginal costs, leading to inefficient outcomes." (ComEd Exhibit 12.0, page 43, lines 913-916). How do you respond?

A. Initially, I note that our descending clock, pay as bid auction is not a sealed bid auction format, so bidders do not, as Mr. Parece states, submit bid schedules to ComEd's auction manager. More importantly, under ComEd's uniform price approach the information provided to bidders on round-to-round auction results will likely result in implicit collusion that will cause large premiums being added to bids which will directly affect the uniform price paid by ComEd for its electricity supply.

Nothing in our descending clock, pay as bid auction prevents bidders from adding some premium to their estimate of the marginal supply price. Bidders are certainly free to do so. But under our pay as bid approach, this is irrelevant. As the price continues to tick down under our descending clock, pay as bid approach, the bidder who added Mr. Parece's premium to her estimate of the marginal supply price in the auction will still have to decide whether to bid at that price. Mr. Parece's premium-adding bidder must still balance her potential gain from

obtaining a higher price for a tranche of electricity it sells to ComEd against her possible loss from not winning that tranche (i.e., losing the sale) in the auction.

Q. Are you aware of any other writings or materials by Mr. Parece relating to pay as bid auctions?

A. Yes. I reviewed ComEd Exhibit 12.2, which is an article captioned "Auction Design for Standard Offer Service" authored by Mr. Parece, P. Cramton and R. Wilson. This article discusses the authors' recommendations for design of an auction for shares of load responsibility for standard offer utility service, which is essentially the same as an auction for ComEd's electricity supply requirements.

Q. In his "Auction Design for Standard Offer Service" article (ComEd Exhibit 12.2), does Mr. Parece recommend an auction format?

A. Yes, as I read his materials he recommends a pay as bid format such as I have recommended on the grounds that this is the best way to determine competitive supply prices. As Mr. Parece and his co-authors state:

> A primary goal of the auction is to determine competitive supply prices for standard offer service. Pay your bid pricing in an ascending bid auction best accomplishes this goal. Pay your bid pricing works as follows. With each round of bidding the bids are ranked in descending order of discount, and then ascending order of time-stamp, to form the aggregate supply schedule. (ComEd Exhibit 12.2, page 12).

Q. But Mr. Parece refers to an "ascending bid auction" in the text you quote. ComEd's proposed auction and the pay as bid modification you recommend are "descending." Can you explain this?

A. Yes. Although Mr. Parece's article refers to an "ascending bid auction," the ascending bidding parameter is a discount from a base price for the standard offer

service that is being auctioned. (ComEd Exhibit 12.2, pages 7-8). An ascending discount is the same as a descending price. Mr. Parece's article includes an example of how his pay as bid auction would work. (ComEd Exhibit 12.2, page 12). It is similar to the example of a pay as bid auction I have attached to this rebuttal testimony as BOMA Exhibit 3.1. As Mr. Parece states with regard to the selection of winning bids:

> Starting with the largest discount, bids are designated as winning bids until the cumulative shares reaches*[sic]* 100 [i.e., the full load responsibility for the purchasing utility]. All other bids are designated losing bids….After the final round of bidding, all winning bids are awarded at the discounts bid – that is, the winning bidders receive the share of the load they bid for at the discounts bid. (ComEd Exhibit 12.2, pages 12-13).

Q. Are there other aspects of Mr. Parece's pay as bid auction design that are similar to the descending clock, pay as bid auction design that you recommend?

A. Yes. In our descending clock, pay as bid auction, bidding continues until no bidder is willing to supply a tranche of electricity at a lower price. (BOMA Exhibit 1.0, page 11, lines 251-252). Mr. Parece's recommended auction design contains an identical feature: "Suppliers bid for shares of the service responsibility over a series of rounds until no bidder is willing to improve any of its bids." (ComEd Exhibit 12.2, page 5).

Q. Do you have any other observations on Mr. Parece's article "Auction Design for Standard Offer Service" (ComEd Exhibit 12.2)?

A. Yes. Dr. LaCasse states in her rebuttal testimony that my use of the auction of electromagnetic spectra by the Federal Communications Commission as an example of a pay as bid auction is "misplaced." (ComEd Exhibit 11.0, page 75, line 1770). However, in describing his recommended pay as bid electricity

auction, Mr. Parece states: "This format is similar to the successful FCC auctions for radio frequency." (ComEd Exhibit 12.2, page 5).

III. Response to Rebuttal Testimony of Dr. William Hogan

Q. What is the purpose of this part of your rebuttal testimony?

A. The purpose of this part of my rebuttal testimony is to respond to certain issues raised by ComEd witness Dr. William Hogan in his rebuttal testimony.

Q. Dr. Hogan states that, as part of your proposed pay as bid auction, you "implicitly assume that somehow it is possible to obtain substantial energy supplies at below market prices." (ComEd Exhibit 16.0, page 30, lines 655-657, see also, page 33, lines 727-729). Does your descending clock, pay as bid auction approach assume that suppliers will sell electricity supply to ComEd at below market prices?

A. That would depend on what Dr. Hogan means by "below market." There are lots of special characteristics of the bidders in this auction that make the concept of a specific market price unhelpful. These bidders have different supply portfolios, different perceptions of risk, and different views of the future. Under our proposed pay as bid auction approach, the price that ComEd pays to a winning bidder for a tranche of electricity supply will be the price that bidder committed to accept by bidding on that tranche in the auction at that price. No supplier is obligated to participate in the auction. No supplier who does participate is obligated to bid on a tranche at a price at which he is unwilling to sell electricity supply to ComEd. When a willing seller agrees to sell an item to a willing buyer at a price that they agree on, that price is not a "below market" price.

Q. Dr. Hogan also says that your proposed pay as bid modification "manipulates" bidders into selling their power at "below market" prices (ComEd Exhibit 16.0, page 31, lines 684-685, page 38, line 846) and that the pay as bid modification results in "somehow forcing the suppliers to ignore their alternatives to sell in the market." (ComEd Exhibit 16.0, page 34, lines 745-746). Does your proposed descending clock, pay as bid modification "manipulate" bidders into accepting a price that they would not otherwise accept or "force" them to ignore alternatives to sell electricity supply outside of ComEd's auction?

A. Of course not. Dr. Hogan concludes that the pay as bid mechanism "manipulates" bidders and "forces" them to do things they wouldn't otherwise do, but he fails to explain the means by which the pay as bid mechanism achieves these alleged feats of bidder coercion. What Dr. Hogan is really saying is that the prices will be lower under our descending clock, pay as bid auction than under ComEd's uniform price auction. But there is no manipulation or coercion involved in our descending clock, pay as bid auction. Dr. Hogan bases much of his criticism of our descending clock, pay as bid auction on nonexistent "manipulation" or "force." I don't think that asking people if they want to bid is coercive or manipulative. All the pay as bid approach does is allow them to bid. How is that coercion?

Simply put, bidder participation and bidding in the auction are as voluntary under our pay as bid approach as under ComEd's proposed uniform, price auction. In fact, our descending clock, pay as bid approach allows people to reenter the bidding after they previously dropped out. In that sense, our approach

is more flexible than ComEd's method, which prevents bidders from bidding on tranches of electricity supply once they have withdrawn those tranches. (ComEd Exhibit 11.4, page 32).

Q. Dr. Hogan also states that the pay as bid approach you suggest would not improve the auction because "it is better to assume that the "law of one price" holds and to design the procurement accordingly as ComEd has done." (ComEd Exhibit 16.0, page 38, lines 847-849). Is Dr. Hogan correct in his statement that the law of one price should apply to ComEd's auction procurement process?

A. Briefly, the law of one price is a concept in finance theory. Assume two financial instruments with identical future cash flows, but these cash flows are constructed or achieved with different components. The law of one price states that if those financial instruments do not differ with respect to factors such as tax treatment, liquidity, credit risk, transaction costs, etc., the two sets of cash flows must have the same market value. If the financial instruments differ on one of these points, then the law of one price would not apply.

ComEd's witnesses have already told us that each bidder will assemble its own supply portfolio on the wholesale market in order to provide to ComEd the full requirements products that are the subject of this auction. (ComEd Exhibit 11.0, page 35, lines 836-839, page 38, lines 899-901, page 49, lines 1162-1164). Bidders will have significantly different costs of production for the vertical slice of ComEd's full requirements product on which they are bidding. Therefore, their transaction costs are quite different and the law of one price does not apply.

494 The law of one price is a consequence of perfect competition in an
495 atomized market, not an objective of market design. The objective of the Illinois
496 Commerce Commission should not be to get to one price for electricity supply,
497 but rather to get to the lowest electricity supply charges for Illinois consumers.
498 Dr. Hogan may want to have one price for his client, but our pay as bid approach
499 better serves Illinois consumers. Dr. Hogan's statement regarding the law of one
500 price is an example of how abstract economic theory can be misused.

501 Q. Dr. Hogan also refers to the report of a "Blue Ribbon" panel captioned "Pricing in
502 the California Power Exchange Electricity Market: Should California Switch from
503 Uniform Pricing to Pay as Bid Pricing?" by Alfred Kahn, Peter Cramton, Robert
504 Porter and Richard Tabors (the "Blue Ribbon Report") and states that the report
505 shows "the core of the logical flaw in the pay as bid analysis." (ComEd Exhibit
506 16.0, pages 34-35, lines 754-787). Do you agree?

507 A. No. The logical flaw in Dr. Hogan's argument against our recommended pay as
508 bid approach is that the California Power Exchange market bears no resemblance
509 to the descending clock auction that ComEd has actually proposed in this
510 proceeding. In describing the California Power Exchange, the authors of the Blue
511 Ribbon Report state:

512 > Under the present uniform-pricing rules, suppliers in an effectively
513 > competitive market have every reason to bid approximately their marginal
514 > opportunity costs for energy in each of the blocks of power that they offer.
515 > (Footnotes omitted). (Blue Ribbon Report, page 3).
516

517 The California Power Exchange market was not a descending clock auction and
518 was structured in a manner that allowed bidders to bid as low a price as they

519 desired. (Blue Ribbon Report, pages 1, 3). In contrast, it will be impossible for a
520 bidder in ComEd's descending clock, uniform price auction with lower marginal
521 opportunity costs for energy than other bidders to bid lower if ComEd has already
522 stopped the auction because the supply that is bid equals ComEd's full
523 requirements.

524 Q. Dr. Hogan refers to the pay as bid arrangements implemented under the New
525 Electricity Trading Arrangements ("NETA") for the United Kingdom, and states
526 that his reading of the theory and evidence on the pay as bid mechanism in the
527 NETA case supports a conclusion opposite that suggested by you. (ComEd
528 Exhibit 16.0, page 36, lines 813-814). Do you agree with Dr. Hogan?

529 A. No. In fact, it is my understanding that the change from the uniform price to the
530 pay as bid approach has now been expanded from England and Wales to the entire
531 United Kingdom as of April 1, 2005 under the British Electricity Trading and
532 Transmission Arrangements ("BETTA").

533 **IV. Response to Rebuttal Testimony of Ms. Arlene Juracek.**

534 Q. Ms. Juracek states that the Supplier Forward Contracts ("SFCs") that ComEd will
535 enter into with successful bidders in the auction are exchange traded or other
536 market traded futures contracts within commonly accepted definitions and that the
537 definition you used to conclude otherwise is "constrained" and "hypertechnical."
538 (ComEd Exhibit 9.0, page 52-53, lines 1238-1240). Have you changed your
539 position as a result of Ms. Juracek's testimony?

540 A. Absolutely not. It strains credulity to think that ComEd's proposed SFC is an
541 exchange traded or other market traded futures contract.

In my direct testimony I discussed the importance of a definite quantity in a futures contract. Under ComEd's SFC, a winning bidder must provide a vertical slice of ComEd's full requirements. ComEd's witness Mr. William McNeil describes the vertical full requirements product that a winning bidder must provide to ComEd under the SFC in his direct testimony. (ComEd Exhibit 3.0, pages 37-38, lines 805-810). According to Mr. McNeil's testimony, the winning bidder must supply ComEd a potentially highly variable quantity because the actual amount of the vertical portion of ComEd's full requirements is uncertain. (ComEd Exhibit 3.0, pages 21, lines 460-472, page 37, lines 804-808). As I stated in my direct testimony, a futures contract specifies a definite quantity to be delivered at a definite time, or for a definite period (BOMA Exhibit 1.0, page 19, lines 432-439). ComEd's SFCs are not futures contracts. Given the open quantity term (i.e., the volumetric risks to which Mr. McNeil refers in his testimony), it would not even be possible to trade an SFC on any exchange or market on which futures contracts are traded.

Q. Is Ms. Juracek's characterization of the Supplier Forward Contracts as exchange traded or other market traded futures contracts wrong?

A. Yes. Ms. Juracek's conclusion that ComEd's SFCs are exchange traded or other market traded futures contracts is incorrect.

Q. Does this conclude your rebuttal testimony?

A. Yes.